

REMARKS

The above-identified application is United States application serial number 10/706,671 filed on November 11, 2003. Claims 1-35 are pending in the application. Claims 1-35 are rejected under 35 U.S.C. 112 and 103(a). Applicant respectfully traverses these rejections.

Rejection of Claims Under 35 USC 112

Claims 32-35 are rejected under 35 U.S.C. 112, second paragraph, as indefinite because Claim 32 lacks antecedent basis for "the supersonic aircraft". In response, applicant has amended the term "the supersonic aircraft" to "a supersonic aircraft" in Claim 32.

Rejection of Claims Under 35 USC 103(a)

Claims 1, 2, 4-6, 8-10, 23, 24, 26, 28, 29, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friebel *et al.* U.S. Patent No. 4,598,886 (hereafter Friebel) in view of Schwaerzler *et al.* U.S. Patent No. 4,161,300 (hereafter Schwaerzler). Claims 11-15, 17-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friebel in view of Schwaerzler and McKinney *et al.* U.S. Patent No. 4,427,168 (hereafter McKinney). Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Friebel '204 in view of Vess *et al.* U.S. Patent No. 4,739,957 (hereafter Vess) and Schwaerzler.

"To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP § 2143. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found

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either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999). MPEP § 2143.01. While failure to meet just one of the three prongs of the test for obviousness is sufficient to overcome rejection of a claim under 35 U.S.C. 103, in the present instance, the rejections of the independent claims fail to meet at least two of the prongs of the test for obviousness.

Independent Claim 1 recites:

"outboard winglet, wherein the leading edge segments have mounted thereon leading-edge flaps";

Independent Claim 11 recites:

"an outboard winglet having a simple leading edge flap coupled to the leading edge of the outboard winglet, wherein the outboard winglet is anhedrally oriented relative to a lateral axis of the aircraft";

Independent Claim 19 recites:

"an outboard winglet having a simple leading edge flap coupled to the leading edge of the outboard winglet";

Independent Claim 23 recites:

"outboard winglet, wherein the leading edge segments have mounted thereon leading-edge flaps"; and

Independent Claim 32 recites:

"leading edge flaps mounted on the central section and the outboard winglet."

(Emphasis added).

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Friebel, Schwaerzler, and/or McKinney, alone and in combination, do not disclose or suggest **flaps on the leading edge of an outboard winglet**, as set forth in Claims 1, 11, 19, 23, and 32. Friebel is cited as teaching an outboard winglet, however, Friebel does not teach a winglet. Instead, Friebel teaches a parabolic wing that wraps partially around an engine nacelle. Even if the outboard portion of the Friebel wing is considered equivalent to a winglet, there is no motivation to provide leading edge flaps on any portion of the Friebel wing because Friebel teaches designing a parabolic wing to achieve favorable interaction between the nacelle and the parabolic wing for increased lift and decreased drag. (Friebel col. 2 lines 5-37). The use of leading edge flaps would change the interaction of the flow around the wing and nacelle, and Friebel does not disclose or suggest parameters for optimizing the interaction of the flow taking both the nacelle and leading edge flaps into account. Further, flaps typically have a range of movement, while the engine nacelle is fixed in place and shape, thereby further compounding the problem of optimizing interaction between the wing and the nacelle with changing flow fields caused by the movable flaps.

In the Office Action, the Examiner states that "[i]t would have been obvious to one skilled in the art at the time the invention was made to have used a control system with leading edge flaps in Friebel *et al*'s system as taught by Schwaerzler *et al* to increase control, maneuverability of the aircraft, reduce trim and vortex drag, and reduce sonic boom." Applicant submits, however, that "[i]n determining the propriety of the Patent Office case for obviousness..., it is necessary to ascertain whether or not the reference teachings would appear to be **sufficient** for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification." *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972). None of the references cited disclose or suggest solving the problem of optimal interaction between the nacelle and parabolic wing in view of a flow field changed by extension of the leading edge flaps. Accordingly, the cited references are not sufficient to enable one skilled in the art to make the proposed combination. As such, there is no teaching, suggestion, or motivation to add leading edge flaps to the parabolic wing in Friebel in any of the cited references.

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There is also no reasonable expectation that a combination of the parabolic wing of Friebe and straight leading edge flaps of Schwaerzler would be successful. Schwaerzler only shows straight leading edge flaps. Such flaps would be forced to buckle to accommodate the curvature of the Friebe wing as they were extended downward. If the Examiner maintains that such flaps are possible, Applicant requests a citation to prior art showing such a configuration of straight leading edge flaps mounted on a curved wing.

Additionally, neither Friebe, Schwaerzler, or McKinney disclose or suggest **flaps on the inboard section of the wing** as set forth in Claims 1 and 23, or "a strake capable of coupling to the aircraft fuselage and extending to the leading edge of the wing, the strake further comprising a leading-edge flap" as set forth in Claim 11. Schwaerzler discloses movable strakes (11) that can act as control surfaces, however, the strakes that are equivalenced to the inboard section of the wing of Claims 1 and 23 do not have leading edge flaps as set forth in Claims 1 and 23.

Further, the fact that Schwaerzler shows leading edge flaps on a wing does not render Claims 1 and 23 obvious because Schwaerzler does not disclose or suggest a supersonic aircraft as set forth in Claims 1 and 23. (Schwaerzler col. 1 lines 22-32). Thus, the cited references do not disclose or suggest all of the elements in Claims 1, 11, or 23 for at least the foregoing reasons.

Dependent Claim 6 recites: "wherein **the leading edge flap of the outboard winglet provides roll control at supersonic conditions and directional control with proverse roll effects.**" Independent Claim 11 recites: "**an outboard winglet having a simple leading edge flap... wherein the simple leading edge flap provides roll control and directional control for the aircraft**". (Emphasis added).

With regard to Claims 6 and 11, the Examiner states that it would have been obvious to use the leading edge flaps in Friebe as taught by Schwaerzler to increase control and maneuverability of the aircraft, however, neither of the cited references disclose or suggest using leading edge flaps for roll control or directional control. Leading edge flaps are deflected collectively to increase lift and affect the pitch attitude of an

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aircraft. Neither Schwaerzler or any other aircraft that Applicant is aware of teaches or suggests using leading edge flaps to provide roll or directional (yaw) control for an aircraft. Thus, the cited references do not disclose or suggest all of the elements in Claims 6 or 11 for at least the foregoing reasons.

Independent Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Friebel 4,828,204 (hereafter Friebel '204) in view of Vess *et al.* U.S. Patent No. 4,739,957 (hereafter Vess), and Schwaerzler. On page 7 of the Office Action, the examiner states "Friebel '204 teaches an aircraft having a wing with inboard section next to the fuselage, a central section (where number 7 is pointed to) with a second swept angle, and an outboard winglet 2 that has an anhedral angle with a third swept wing angle." Applicant cannot find central section 7 or winglet 2 in Friebel '204, however. Further clarification of the basis for this rejection is requested in the event the Examiner does not agree that Claim 32 is allowable for the reasons stated hereinabove.

Claims 1, 11, 19, 23, and 32 are therefore allowable over Friebel and Schwaerzler, alone and in combination, for at least the foregoing reasons. Claims 2-10, 12-18, 20-22, 24-31, and 33-35 depend from Claims 1, 11, 19, 23, and 32 respectively, and include features that further distinguish them from the cited references. Allowance of Claims 1-35 is respectfully requested.

Claim 1 Amendment

Claim 1 has been amended to remove the phrase "a wing, wherein the wing further comprises", which was redundant because Claim 1 is already directed to a wing.

New Claim 36

Claim 36 has been added to claim subject matter that was originally set forth in the specification. No new matter has been added. Claim 36 depends from Claim 32, which is believed to be allowable. Allowance of Claim 36 is therefore also requested.

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CONCLUSION

Claim 1 has been amended to remove a redundant statement. Claim 32 has been amended to remove rejection of the claim under 35 U.S.C. 112. Claim 36 has been added. Applicant believes Claims 1-36 are in form for allowance and a notice to that effect is solicited. In the event it would facilitate prosecution of this application, the Examiner is invited to telephone the undersigned at (949) 251-0250.

I hereby certify that this correspondence is being facsimile transmitted to the USPTO, Central Number at (703) 872-9306 on the date shown below:

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